AQUARIUS™
HOME COMPUTER SYSTEM

FINFORM™
W O R K S H E E T
USERS GUIDE

MATTEL ELECTRONICS®
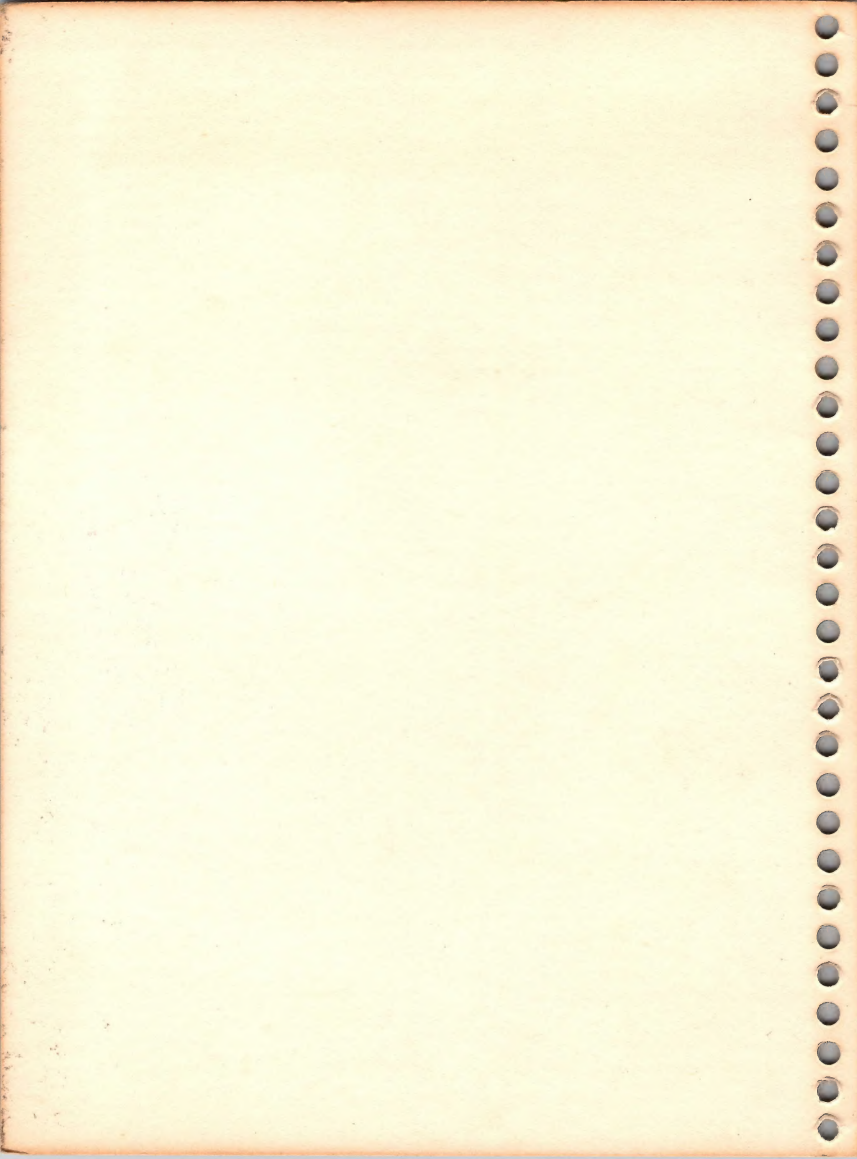
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CHAPTER 1:
INTRODUCTION

WHAT IS FINFORM™?

Suppose you come home one day and find two letters in your mailbox. One tells you your utility rate is going to be increased up to thirty percent in the next six months. The other letter informs you that your insurance premium just went down. Just last week you finished working out your budget for the next six months. Now you're going to have to sit down and fit these brand-new figures into what has quite suddenly become outdated work. If you were using a calculator and making handwritten changes into a ledger, it would take a long time...maybe hours. But you're using FINFORM™. You're going to change some items, re-figure a whole set of values and come up with an entirely new budget projection for the next six months, all in minutes.

FINFORM™ is the home finance and budget management program designed to run on the AQUARIUS™ Home Computer System, but you don't need to know a thing about computer programming to make FINFORM™ work for you. It comes in a cartridge, ready to go. Use it with your Aquarius Home Computer System, Mini Expander and either 4K or 16K Memory. In a short time you'll be inside a whole new world of home budgeting. Best of all, you don't even have to be good with figures. FINFORM not only makes your calculations for you, it helps you make long-term projections, which you can store and alter at your convenience. FINFORM is fun to learn, and it's easy to use. Most important, it's a powerful home management tool designed to make things simpler.

BUDGET MANAGEMENT FOR THE FUTURE

Each time you use FINFORM™, you are provided with a large electronic spreadsheet or worksheet. Instead of using a calculator, writing items into a ledger and making hand-entries, you can do all of your figuring and your finalized record on FINFORM's electronic spreadsheet. It's your basic working area, and you control it completely through FINFORM. Once the FINFORM cartridge is in place, you can manipulate your worksheet through the keyboard of your AQUARIUS™ Computer and see the results on your television screen, which becomes a window for your work.

There is plenty of space for any kind of budget work you have in mind. You can design your own formats, run calculations, get projections and make changes with just a few simple commands. Dozens of budgets, and even just their blank formats, created by you for future use, can be stored on a handful of ordinary cassettes. This allows you to build up a library of easily controlled budget information. If you need professional looking hard-copy, all you have to do is tell FINFORM™ you want a printout. It directs the AQUARIUS™ printer to print out exactly what you want, just as it appears on your worksheet.

USING FINFORM™

FINFORM can be used in just about any situation where lists of numerical values must be itemized. This might include simple budgets or complex ones.

Household expenses, insurance, medical, automobile expenditures or combinations of home and outside cost projections can all be handled by FINFORM. If you're a teacher or a grade-conscious parent, you can use FINFORM's abilities to keep records and averages on grades and scores. If you're a sports fan, player or spectator, you can store and project information on your favorite teams or players. In practical application or for pleasurable pursuit, the possible uses for FINFORM are open to your needs and your imagination.

LEARNING HOW

In the upcoming chapters we'll show you exactly how FINFORM works. We'll take you through the entire program, and you'll learn about FINFORM as you operate it. We're going to show you how to store all of your work on cassettes and how to recall your stored information whenever you need it. After an hour or two of practice, following the lesson plan in this book, you'll be well on the way to becoming a FINFORM expert. So let's begin.

When you're maintaining a budget, you want to be able to get a more accurate picture of how a budget is shaping up. Having the ability to make as near-perfect a forecast about your finances as is possible is just plain good sense. The right tools make all the difference.

To show you, we're going to start with a forecasting example done by hand and contrast it with one done through FINFORM™. We've talked about the power of our financial management program. Now let's look at it. Below (2-1) you see an example of an expense budget. It's just a few items, totalled. But even at this level budgets can present problems. Let's suppose you've just bought a brand new car. You want to plan a general sort of expenditure budget over the next five years, based on what you're spending now. GAS or OIL can be dependent on what's happening in the world. You can only go by current trends. REPAIRS takes a similar role, based on your own past experience. It can take on more complex significance on the worksheet, as it is forecast as a percentage of MAINTENANCE.

Sitting down to do this with a pencil, paper and calculator, you have the ledger worksheet 2-1 and some probable ideas about the way things are going to go. You're expecting gas to go up in price by five percent a year. (Remember, this is just an example!) This means you're paying $1.15 per gallon in YEAR 0, (the year the car was purchased), and you expect to pay $1.21 in the next year, (Year 1), which goes to $1.27 in YEAR 2, and finally to $1.33 in YEAR 3. Fuel costs for the current period, YEAR 0, are calculated by multiplying the estimated number of MILES to be travelled by current fuel costs. Costs for future ex-

penditures are calculated at your present MILES (not expected to increase) and the estimated increase of five percent per year for gasoline.

For the remainder of the list, you're assuming MAINTENANCE (TIRES, INTERIOR, EXTERIOR, MISCELLANEOUS) costs as a series of subtotals and price (whether increased or stable) is calculated, again, purely on your estimate.

FIGURE 2-1 HAND-CALCULATED BUDGET FORECAST FOR FIVE YEARS.

AUTO BUDGET YEAR					
	0	1	2	3	4
MILES	20000	20000	20000	20000	20000
MPG	30	30	30	30	30
GAS	800	840	882	926	972
OIL	100	105	110	116	121
INSURANCE	500	500	500	500	500
TIRES	600	600	600	600	600
INTERIOR	100	100	125	125	150
EXTERIOR	200	225	250	275	300
REPAIRS	100	200	250	300	350
MISC	200	200	200	200	200
MAINTENANCE					
TOTAL	2600	2770	2917	3042	3193

You have calculated these columns and rows based on your assumptions and estimates. Suppose further. Things suddenly change. Surprise.

The Great Razooly, brother of the Shiek of Phranistan, throws a coup against his beloved sibling and makes a new deal with oil-purchasing nations. Fossil fuels go down, and your gas costs start dropping in price at the rate of three-and-one-half percent a year. On the other hand you are involved in a minor accident. Your insurance premiums go up, and so do your repair bills. At the same time, you get a career promotion, but that means more travel and extra mileage. Now all of your careful projections are invalid.

Now you'll need a fresh worksheet, because you're going to be recalculating a lot of your assumptions. You could carry some of your figures from 2-1 over to the new sheet (this will tend to increase your margin for error) but refiguring in relation to everything must be entirely new.

You just don't have powerful enough tools to make accurate forecasting. Everytime something new comes up, you're going to have to re-work some, if not all of your budget. Accuracy in keeping numbers straight takes up the effort that could be used in better long-term budgeting.

FINFORM is ideal for getting solutions in these kinds of problems. With the electronic worksheet, or spreadsheet, you can re-design and re-figure out-moded budgets whenever necessary. The budget shown before is now displayed as part of a FINFORM worksheet. You can see how only part of the entire budget can be viewed in this way. We'll be talking about this a little later on in the chapter, when we show you just how big your FINFORM worksheet can be, dependent on what you want. You can also see how the two screens below, (2-2 and 2-3), resemble the format of the hand-entry worksheets. We've used FINFORM to prepare a worksheet that matches our needs for an automobile expenditure budget. Let's look at how a FINFORM budget replaces your earlier examples of a ledger worksheet.

Maybe the price of gasoline goes down a full four percent instead of three-and-a-half. You can ask this kind of "maybe" or "suppose" question of FINFORM, and it can handle it, and additional suppositions with ease. With FINFORM, you can change the figures on MILES, GAS, and INSURANCE in a couple of minutes, and have the revised budget shown in 2-3. If you want, you can "suppose" about TIRES, MISCELLANEOUS items, or add new items into your budget. The building of this automobile expenditure sheet, using FINFORM, is going to take you just about the same amount of time as the hand-written ledger version, (though this doesn't hold true in all cases). But once you've set it up, you've got a real advantage. You can then change any value or assumption and immediately see how it could affect the rest of your budget.

FIGURE 2-2

I	A	II	B	II	C	I
1						
2			AUTO BUDGET/YEAR:			
3						
4			0			
5						
6	MILES		20000		20000	
7	MPG		30		30	
8						
9	GAS		800		840	
10	OIL		100		105	
11	INSURANCE		500		500	
12						
13	TIRES		600		600	
14	INTERIOR		100		100	
15	EXTERIOR		200		225	
16	REPAIRS		100		200	
17						
18	MAINTENANCE		200		200	
19						
20	$ TOTAL		2600		2770	
21						
22						
23						

This is what FINFORM™ is going to do for you.

We'll move to a more complex, realistic example of a FINFORM budget now. Figure 2-3 shows a complete worksheet. Notice that

a 0 has been entered for items in which there is no possible projection, but space has been made available for future possibilities. Always use the number zero, never the letter "O" in numbers and in cells being reserved for numbers.

You can see how the new budget has line items, subtotals and final totals, that have been formatted with various lines and borders for the grouping-together of items with a subtotal relationship.

We're using a system that by its nature, cannot show the entirety of a worksheet this size on your TV screen. FINFORM has commands that allow you to look at whatever portion of worksheet you are on before printout. (If you use a printer.) It's as if you were moving the screen to get a look at one group of figures or another. This capability is an important part of the FINFORM program. It's called the electronic window, and we'll tell you more about it later in the book.

FIGURE 2-3 DETAILED FINFORM BUDGET
SEEN THROUGH WINDOW WITH SUBTOTALS:

I	A	II	B	II	C	II	D	II	E	II	F	II	G	I

```
 I    A    II    B    II    C    II    D    II    E    II    F    II    G    I
 1I
 2I
 3I                      5 YEAR BUDGET FORECAST
 4I
 5I                      AUTO EXPENSES PER ANNUM
 6I
 7I
 8I#/ ITEM                YEAR 0      YEAR 1     YEAR 2     YEAR 3     YEAR 4
 9I
10I  = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
  =
11I
12I   1 MILEAGE           20000       20000      30000      30000      30000
13I   2 MILES PER G          30          30         35         35         35
14I   3 $PER GAL           1.15        1.22       1.27       1.27       1.27
15I  ---------------     ---------   ---------  ---------  ---------  ---------
16I  SUB.                   766         813       1089       1089       1089
17I
18I
19I   4 ACTUAL GAS         889           0          0          0          0
20I   5 OIL                100         100        125        130        135
21I  ---------------     ---------   ---------  ---------  ---------  ---------
22I  SUB.                  989         100        125        130        135
23I
24I
25I   6 INSURANCE          500         750        700        700        700
26I   7 LIFE              1000           0          0          0          0
27I   8 THEFT                0           0          0          0          0
28I   9 VANDALISM           0           0          0          0          0
29I  10 ACCIDENT            0         750          0          0          0
30I  ---------------     ---------   ---------  ---------  ---------  ---------
31I  SUB.                 1500        1500        700        700        700
32I
33I
```

```
34I  11 MAINT.
35I  12 TIRES          600        600        600        600        600
36I  13 BRAKES           0        200          0          0          0
37I  14 DRIVE TR.        0        300          0          0          0
38I------------------ ---------  ---------  ---------  ---------  ---------
39I  SUB.              600       1100        600        600        600
40I
41I
42I  15 INTERIOR         0          0          0          0          0
43I  16 SEATS            0        200          0          0          0
44I  17 DASH             0         50          0          0          0
45I  18 STEREO         900          0          0          0          0
46I------------------ ---------  ---------  ---------  ---------  ---------
47I  SUB.              900        250          0          0          0
48I
49I
50I  19 EXTERIOR
51I  20 PAINT            0        300          0          0          0
52I  21 CHROME           0          0          0          0          0
53I  22 TOP              0          0          0          0          0
54I  23 GLASS            0        345          0          0          0
55I------------------ ---------  ---------  ---------  ---------  ---------
56I  SUB.                0        645          0          0          0
57I
58I
59I  24 MISC.          100        100        100        100        100
60I
61I
62I
63I ************************************************************
*
64I $  TOTAL          4855       4508       2614       2619       2624
65I ************************************************************
```

Look at the columns and rows in 2-3. Each column has an assigned letter, each row a number. The places where a lettered column and a numbered row meet to form a space for entry on the worksheet are called cells. Within any cell on the sheet you can create a label.

YEAR 0

found in cell C8 is an example of labelling, or heading. The bulk of your worksheet cells are going to be filled with numbers, which when used in figuring, are classified by FINFORM values. Values are numbers used to work out formula problems. Anything put on a FINFORM worksheet that isn't classified as a value is considered text, even numbers like the 0 in YEAR 0.

989

located in cell C22 is a total of the values found in cells C19 and C20. The formula for obtaining this sum does not appear on the worksheet. Only 989 shows, but when values for C19 and C20 are changed, cell C22 shows a new total. Notice the way one section of the entire worksheet example has been off-set from the remainder. This is approximately as much as you might see through your television screen, if you'd built a worksheet like the one in 2-3 and wanted to look at that particular portion. It's sort of like running a powerful magnifying glass across the text of a finely-printed page — a certain area is highlighted; only in this case you can see only what's under the "magnifying glass."

Just how many cells are there in a single FINFORM worksheet? Glad you asked. Thousands — literally. Columns run from A through Z, begin again as AA and run through AZ, begin again as BA and run through BK. This gives you over 16,000 cells for entry purposes. To build larger, more detailed worksheets you'll need an AQUARIUS™ Home Computer memory cartridge. This gives your computer extra "memory" and working-space on the FINFORM worksheet (see Appendix A-1). You'll probably never need to use more than a couple of thousand cells on a work-sheet, but it's nice to know you've got plenty of work-space for any type of worksheet you may want to build.

BUILT-IN FUNCTIONS AND COMMANDS

The most important things to know about FINFORM are the methods that enable you to make fullest use of the electronic worksheet. These methods can be divided into two general categories, BUILT-IN FUNCTIONS, or just plain BUILT-INS, and COMMANDS. Let's talk about built-ins first. These are the actual mathematical capabilities that make FINFORM calculate values for different budgeting functions, including sums, multiplication/division, percentages and absolutes. They perform the necessary calculations and formulas you would have otherwise done on a calculator and then entered into a ledger, only they do them for you right on your FINFORM worksheet.

For instance, if you were to put a value in cell C27 (see FIGURE 2-3) and make that value show in D27, E27, F27 and so on, right across your worksheet, there's a command for making a value copy to the next cell or cells. Other commands control printing, formatting, and so on. We'll tell you all about the commands and built-in functions available to you in Chapter 4, USING FINFORM.

Right now, let's go on to some of the other advantages of
FINFORM that you'll be learning about in subsequent chapters.

TEMPLATES: BUILDING YOUR OWN BLANK FORMATS

Go back and glance at 2-3 one more time. See how a lot of the
values in subtotal columns have purposely been kept at 0?
These cells have been reserved for future use. If we wanted to,
we could make the entire worksheet up with nothing but zeroes
for value entry. In doing this, the sheet could be made up ahead
of time and stored for future use. This type of blank worksheet is
called a template or blank format. 2-3 is a partial template. That
is, some, but not all of the line items are in use. It can be stored
on cassette and "brought back" any time new expenses are in-
curred or the budget needs to be re-figured. This gives you a lot
of flexibility.

BEFORE WE GET STARTED

In the upcoming chapter, GETTING STARTED, we'll be talking
about the basics of how you can make a FINFORM worksheet
do what you want. You'll be learning about the edit-block, a
small format located at the bottom of the FINFORM "page"
which is where all user control begins. In Chapter Four, you'll
work on a starter-format, and learn how to move text and values
around on your worksheet. Right now let's go over what we've
discussed.

This chapter has given you an idea of what you can expect from FINFORM in terms of what it can do for you. We've talked about:

☐ The electronic worksheet, or spreadsheet on which you can work your values and formulas and create your headings. How this is divided up into columns and rows which create coordinates, and how these coordinate locations become areas for entry, called cells, of which there are more than 16,000.

☐ The electronic window, which we can scroll to any part of the worksheet like a magnifying glass on a page of small text.

☐ Built-in functions and commands, and how they constitute the two kinds of methods by which you calculate values and control the actual layout of your worksheet.

☐ The use of blank-formats, or templates that can be used whenever needed when stored on cassette.

The rest of this book gives you all the information you need for using the capabilities we've been previewing. It is designed for you, the user, to use in conjunction with FINFORM and your AQUARIUS™ Home Computer System, and answers a lot of questions about what to do while you're actually doing it.

CHAPTER 3:

GETTING STARTED
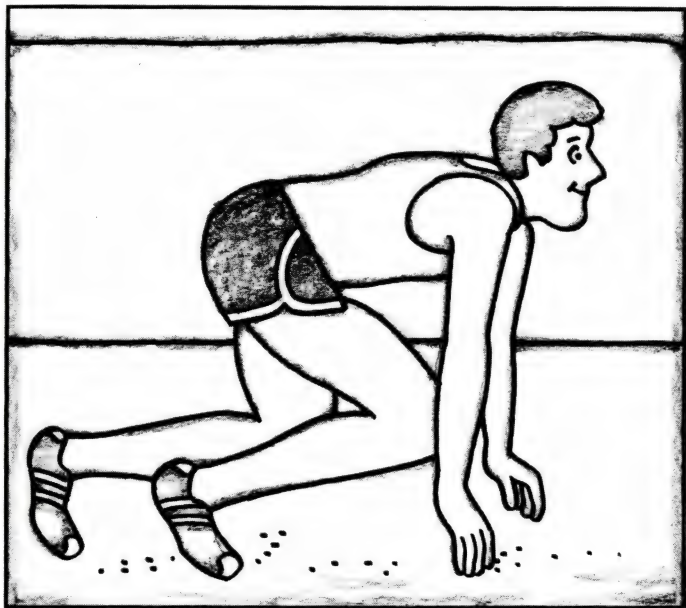
If you haven't already got your AQUARIUS™ Home Computer System set up and ready to run FINFORM, do so now. This is where we begin learning how to control FINFORM. This means you should already know how to connect your AQUARIUS™ Computer to your television, and the Data Recorder you will need to save your worksheets. You should also be familiar with the method for loading AQUARIUS program cartridges into the computer. Lastly, take the keyboard overlay cards out and place them over your AQUARIUS keyboard. It'll make it easier to learn how to use your keyboard in controlling the worksheet.

If you haven't completed these steps, go back and make your preparations. If you aren't sure how, refer to the AQUARIUS User's Guide for directions on system set up.

Any reader or user who has an AQUARIUS immediately available is encouraged to follow along with the chapter. Further skill-enhancing exercises are provided in CHAPTER 4, USING FINFORM, and CHAPTER 5, TEMPLATES AND PRACTICE PROBLEMS.

FINFORM™ CONTROL: WORKSHEET AND WINDOW

This is the first step in controlling your electronic worksheet. If you have properly loaded the FINFORM™ cartridge into your AQUARIUS™ Home Computer, you are now looking at a blank worksheet on your screen. The illustration (3-1) provides a brief idea of what comprises a worksheet.

FIGURE 3-1 SUCCESSFULLY LOADED FINFORM WORKSHEET.
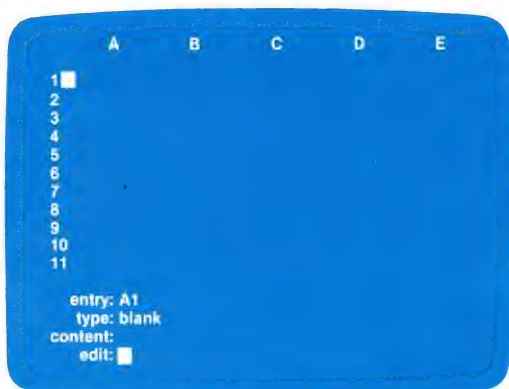
FINFORM gives us a large electronic worksheet, with lettered columns and numbered rows, as seen in 3-1. Look at where column A meets row 1 on your worksheet. See a green rectangle there? This is called the entry cursor. This cursor highlights whatever coordinate, or cell you happen to be working on. When you load FINFORM into your AQUARIUS the entry cursor always appears on cell A1.

We need to talk about cursor control. First let's look at the edit block format again. That's the four lines of text at the bottom of your worksheet.

entry: A1

This tells you which cell you are on. After you've loaded FINFORM the entry line always says you're on A1. To move to another cell you have to use the CONTROL key on your AQUARIUS keyboard. First look at the worksheet — see how the green rectangle overshadows A1? This is your entry cursor, which always delineates the cell you've stopped on. Now look at your AQUARIUS keyboard. Note the key marked ⌷CTL⌷. This is the CONTROL key, and it's through this key, in combination with a few others that you control the location of your entry cursor. Look at your keyboard again — notice the arrangement of the keys, ⌷E⌷, ⌷S⌷, ⌷D⌷, and ⌷X⌷, marked by arrows on your overlay? These keys, in combination with CTL, move the entry cursor up, down, forwards or backwards, just the way the arrows point on your overlay.

Now hold down your ⌷CTL⌷ key. Be sure you have it firmly depressed before pressing on any other key. When this is done, still pressing on ⌷CTL⌷, press the ⌷D⌷ key once. The green rectangle moves one cell to the right and now highlights B1. Do this again. Still holding down on ⌷CTL⌷, press the ⌷S⌷ key. The entry cursor moves back. If you keep pressing on it without letting up, it moves all the way back to A1. Try pressing ⌷CTL⌷-⌷X⌷. The cursor moves down one cell. ⌷CTL⌷-⌷E⌷ and the entry cursor moves back up a cell. It's easy to remember. For entry cursor control, just look at your overlay.

The next item in the edit block is the *type:* line. This is what tells you what kind of entry you are making into a particular cell. This ties in with the use of the *edit:* line, so let's look at it all at once.

There is also a cursor in front of the *edit:* line. This is called the edit cursor. Type a character. It shows on the *edit:* line. If you type a number, the *type:* line says 'value'. If you type a letter or a symbol, the *type:* line reads 'text'. FINFORM knows the difference. When you type nothing, the *type:* line indicates a 'blank'.

Suppose you change your mind before or after you actually enter text or a value. Do this: if you're not already back on cell A1, move there now. Now look at the edit block. It reads:

          entry: A1
           type: (text) or (value) or (blank)
        content: actual text or number. Empty if type: line is blank
           edit: ■
                 ↑
        EDIT CURSOR

If there's something in the cell, let's change it. Holding down on the [SHIFT] key, type FINFORM. If you make a mistake typing, not to worry. See the key marked RUB on your overlay? It has an arrow on it. That is how you make your edit cursor back up. The SPACE key or any character (number, letter or symbol) key makes it go forward. We'll make an actual entry in the A1 cell. If you haven't already done so, type FINFORM now. Press the [RTN] key.

If you've entered the word FINFORM, it appears in cell A1, and the edit block reads:

          entry: A1
           type: text   : left justified
        content: FINFORM
           edit: ■

There's a bit more than just this to installing what you want where you want it on the FINFORM worksheet; (for instance, left justified on the *text:* line is part of the actual formatting of the worksheet. We'll cover it later, but now you know the basics for entry and the rest, coming up a little later, is going to be a snap.

GETTING FROM HERE TO THERE: SCROLLING AND GOTO

There are two different ways of moving across the face of your worksheet to look at different parts of it under the electronic window. One is to scroll. Remember how to use the CTL key to make the entry cursor move from cell to cell? Press | CTL |-| D | and continue to hold down. See how the column lettering on the top border runs by? It also changes in the *entry:* space in your edit block. You can go all the way out to the last column, BK, in this way. Just as easily, you can scroll back to A1 with CTL-S. With CTL-X you can scroll all the way down to row 255 if you want, and CTL-E takes you back to the top. This scrolling ability allows you to scan a large section of the worksheet's "grid". Generally you'll be using it when you have a lot of entries in different cells over a wide area and you either aren't sure what you're looking for or you just want to run the electronic window over your worksheet for a complete edit.

That's scrolling, and it's very useful when you want to look at a lot of different entries. But what if you have a particular cell in mind? How do you get from where you are to there without scrolling through a lot of other stuff you don't need to look at? Easy. You use GOTO. GOTO is a command that allows you to place the entry cursor over any cell on the worksheet. Why don't we try it? Type the > symbol in the first space of your *edit:* line.

(No need to press RTN yet; this automatically "summons" GOTO). GOTO automatically shows underneath the *edit:* line with the edit cursor in GOTO entry space, like this:

> edit:
> Goto: ■

We'll move all the way to J115. Type J115 into the GOTO space. Now press ⎡RTN⎤. The entry cursor appears in cell J115. J115 becomes the "top" of your window view of the worksheet, just as A1 was before using GOTO. The rest of what you see is everything to the right of J column, and below the 115 row. This is always the case when scrolling or using GOTO, unless you've reached the far right side column, BK, (everything to the left displays) or the bottom row, 225, (everything above displays) or both (above and left display). The *entry:* line on your edit block now reads *entry: J115.* Let's go back to A1 now. Enter a >. Now type A1 into the GOTO space. There. You've done it.

ELEMENTS THAT MAKE UP YOUR ELECTRONIC WORKSHEET

Now that you have the basics of worksheet control, it's time to move on, in the next chapter, to actual worksheet formatting. Below is a table with billing periods divided into months. In Chapter Four we'll be using FINFORM's commands to create this kind of report.

MONTHLY UTILITIES BILL

JAN	30.00
FEB	34.00
MAR	38.50
APR	41.00
MAY	45.00
JUN	48.00
TOTAL	236.50

This table can be divided into three basic parts:

• Column and row identification, called text or headings —
(MONTHLY, UTILITIES, BILL, JAN, FEB, — ETC.)

• Numbers (30.00, 45.00, etc.) or values.

• The TOTAL: 236.50, not just a value but the sum of the six
monthly values. This gathering-together of values, or sum, is
referred to as the formula.

In the next chapter we'll show you how to set up a projection
such as the one depicted above, using the commands that con-
trol the entry or formatting of the three previously mentioned
basic elements: text, value and formula. You are going to be us-
ing three elements to build most of your worksheets, and in
order to use them to your greatest advantage and with the most
power FINFORM can provide, you're going to have to know
about the menu of commands that FINFORM provides to control
text and formatting. In the same chapter we'll teach you all
about FINFORM's built-in functions, which help you solve your
calculations.

REVIEW

In this chapter we've gotten you started with the basic concept of FINFORM. We've looked at:

☐ How to move the entry cursor and the edit cursor.

☐ What the different lines on the edit block mean, and how they help you control the worksheet.

☐ The difference between text, value and formula, as the three basic components of any worksheet.

☐ How to move the electronic window over the grid of the worksheet, using the scroll.

☐ How to move to a particular cell, using the GOTO command.

CHAPTER 4:

USING FINFORM

SETTING UP THE ELECTRONIC WORKSHEET

We're starting with something simple. Below you see a
FINFORM version of the monthly billing projection we used as
an example in Chapter 3. This is the way it's going to look on
your worksheet.

**FIGURE 4-1 MONTHLY BILLING PROJECTION ON
FINFORM WORKSHEET.**

We'll begin by putting this easy format together one step at a time. Then we'll add on to it later and make it a bit more complex.

While we're starting up we'll be using some of the FINFORM commands and built-in functions. We will be previewing a few commands at a time, so that you can get used to the feel of each one of them as you use them. These previews are brief, but there's a complete list of all the commands and built-ins further back in this chapter — so if you feel the need to jump ahead and look at one thing or another, please do. That's why they're there. You can also check your command and built-in reference pages, in Appendices A-1 and A-2.

Now. Before we make any entries we're going to have to set up the worksheet. This involves using the commands. Move your entry cursor to cell A1. Press the ⌐/⌐ key. Below the *edit:* line another line immediately shows. This is the *commands:* line. The bunch of capital letters that follow is the command menu. FINFORM is offering us a series of choices that control the worksheet. What would we like to do? Well, right now we want to make sure there's enough space within each column for the kind of text and value entry we're going to be building. The edit block shows:

        entry: A1
         type: blank
      content:
         edit:
    commands: CDFGILMOPSW

We need to widen our columns. By ''default'' (that means they always begin that way on a fresh worksheet) they are five characters wide. We want to have enough working space to be able to fit things like all of the letters of the word MONTHLY into a single column without having to go back and put the letters that didn't fit into the next one. We want the WIDTH command. Press

the ⬛W⬛ key. (Upper or lower case — except in certain instances, FINFORM doesn't care). The *command:* line disappears. You're now "in" the WIDTH command. If you wanted to get "out" you'd simply press the RTN key — but you don't. Not yet, anyway. The *edit:* line reads:

edit:
Width: 5-36 ■

5-36 is the range of acceptable width, counted in characters. You enter the number you want, starting with where the edit cursor now shows. Let's talk about this for just a moment. UTILITIES is the largest entry item, in terms of character width, that we have. It is nine characters wide. When specifying width with FINFORM, you must always consider your widest entry as your standard, since you can't make columns different sizes. You must also consider value entries. When installed on the worksheet, positive values always show with an extra space in front of them instead of + sign. This blank is considered a character, just like a + would. So when you're deciding on character width, it's a pretty good idea to give yourself at least one space more than the width of the widest text or value entry, maybe even a couple, just to be on the safe side. The widest entry is nine characters so in response to the *Width: 5-36* ■, we'll type 12, and press ⬛RTN⬛. The edit cursor is suddenly back on the *edit:* line and all of our columns are now 12 characters in width. Do we need to do anything else with the command menu? We want to make sure we can set up our sheet as quickly as possible. Type a / again. When CDFGILMOPSW comes up, type ⬛O⬛. This is the ORDER OF RECALCULATION COMMAND, which is a fancy way of asking you if you want to point the entry cursor down a row or a column.

Using the ORDER OF RECALCULATION command means knowing if we're going to move to the next row or column after typing a text or value and pressing RTN.

In this case, we make the edit cursor jump across from column-to-column. Having typed $\boxed{O}$, you are asked, or prompted:

Order of calculation: R, C

• R, (ROW) sets the entry cursor to move across a row after pressing $\boxed{\text{RTN}}$.

• C, (COLUMN) sets the entry cursor to move down a column after pressing $\boxed{\text{RTN}}$.

We need to make the cursor move down Column B so that we can put in a label or two. Press $\boxed{R}$ and $\boxed{\text{RTN}}$. Now we're ready to enter some text.

Look at your overlay again. Move the entry cursor to cell B1. Then go ahead and type "MONTHLY". If you make any mistakes back up with $\boxed{\leftarrow}$. Now press $\boxed{\text{RTN}}$. The word disappears from the *edit:* line and shows on the *content:* line. You've just made an entry. Now go ahead and repeat the action with UTILITIES and BILL, but notice how the entry cursor has already moved down to B2. Move the entry cursor back to A4 using $\boxed{\text{CTL}}$-$\boxed{S}$ and $\boxed{\text{CTL}}$-$\boxed{X}$. Go ahead and enter JAN, FEB, etc. Skip a line • by pressing $\boxed{\text{RTN}}$ and enter TOTAL. Move back up to B4 using $\boxed{\text{CTL}}$-$\boxed{E}$ and $\boxed{\text{CTL}}$-$\boxed{D}$. For now we'll dispense with decorative underlines, and go straight to the use of formulas.

We want to enter our figures and make them total, just like 4-1 at the beginning of the chapter. FINFORM defaults to two decimal places automatically, so we won't need to change anything here.

There's a group of functions that handle all the arithmetic of FINFORM. We've already mentioned them. They're called the built-in-functions, or built-ins. The first built-in we'll use is the one we need to get a total. It's called the $SUM function. Look at Figure 4-2.

FIGURE 4-2 USE OF SUM FUNCTION IN PROJECTION.

Now you get to do it. Just like every other action in FINFORM, it all starts on the *edit:* line. Type a + $SUM first. The + tells FINFORM you want to calculate a formula, not just install another value. The $SUM tells what kind of calculation you want to make. Don't confuse this with a $ sign because we're working with a monetary projection — the $ sign prefixes every built-in function in FINFORM. In actual value entry, we never use dollar signs.

Go ahead and make your total, using the same formula depicted in 4-2. Be sure your entry cursor is on the line where you want everything to total.

```
    entry: C11
     type: value
  content:
     edit: +$sum(C4>C9)
```

The > means you're summing up everything from C4 through C9. A 'calculating' message briefly flashes after pressing ⎡RTN⎤, and the formula or total is installed in cell C11. You've done it. You've got yourself a total, and one complete, (if imaginary) little budget projection. Now let's elaborate, using all the commands and built-ins to create a more complete model of a home-style budget.

COMMANDS AND BUILT-INS: READY FOR A RUN-THROUGH

Figure 4-3 represents an idea of what you can do to expand or change a worksheet using FINFORM's commands and built-in functions. You'll be using the commands we've already shown you and with what we're about to show you, in the next two sections, you'll build a replica of this expanded home budget. Then we'll go ahead and fool around with the format and the formulas so you can get used to the rest of the commands and built-ins.

If you haven't already done it, take a look at 4-3. It looks a little different than the simple budget which preceded it because it was modified using different commands.

CDFGILMOPSW. Everything you need to make formatting changes (there's also a glossary listing all commands in Appendix A-1) can be found in this jumble of capitals. You'll notice that in 4-3 divider lines have been added, columns have been added, text has been moved, values have been copied.

FIGURE 4-3 HOUSEHOLD BUDGET MODIFIED USING FINFORM COMMANDS.

	A		B		C		D		E	
1										
2			MONTHLY EXPENDITURE:							
3										
4			UTILITIES		GROCERIES		CAR		HOUSE	
5							PAYMENT			
6										
7	JAN		30.00		150.00		225.00		900.00	
8	FEB		34.00		150.00		225.00		900.00	
9	MAR		38.50		150.00		225.00		900.00	
10	APR		41.00		151.00		225.00		900.00	
11	MAY		44.50		151.00		225.00		900.00	
12	JUN		44.50		151.00		225.00		900.00	
13	JUL		52.00		153.00		225.00		900.00	
14	AUG		55.00		153.00		225.00		900.00	
15	SEP		57.00		153.00		225.00		900.00	
16	OCT		60.00		155.00		225.00		900.00	
17	NOV		62.00		155.00		225.00		900.00	
18	DEC		64.00		170.00		225.00		900.00	
19										
20	TOTAL $+		582.50		1842.00		2700.00		10800.00	
21	ITEM									
22										

Everything was done using the command menu. We'll be duplicating most of those commands to change a simple budget to something like the more detailed description shown above.

CDFGILMOPSW: A COMPLETE RUN-THROUGH

The last couple of sections of this chapter were a preview, a way of getting you comfortable with the basic feel of the worksheet. Now we're going to cover the entire command menu, one command at a time, with explanations and examples showing how they are used to build a more detailed format. When we're done with that, the next section covers all the built-ins. We'll take the budget we've made and use it as we go through the ways FINFORM built-in functions help you project your budget. So that you'll get a real good idea of how these commands are used in the reformatting of a worksheet, we'll go through them in a slightly different order than that of CDFGILMOPSW.

WIDTH (W COMMAND): Let's widen our columns. If the longest text entry is 12 characters we should widen our columns to at least 14 spaces. This is going to move column C out of range of your window; you can look at it by scrolling your entry cursor. Width is global, that is to say you can't make different columns different sizes. Type ⌷ W ⌷.

You get a prompt (message from FINFORM) asking for a choice of size shows.

Width: 5-36 (5 minimum/36 maximum spaces)

Choose any width from 5 to 36 spaces and press ⌷ RTN ⌷. Your columns are automatically widened or narrowed. In this case we want the columns 14 character spaces wide. Enter 14. Then press ⌷ RTN ⌷.

INSERT (I COMMAND): This command allows you to insert rows and columns. We'll insert some rows. Type ☐ I . You're prompted to choose insertion of a row or a column.

> Insert: R, C Choose R for ROW or C for COLUMN
> ☐ R   Inserts a row.
> ☐ C   Inserts a column.

We need some space between rows for text that's going "between" rows 1, 2 and 3. Place the entry cursor over row 1. Repeat this action with rows 3 and 6. Inserting spaces will change a total. Don't worry about it, we'll re-total when we get to the built-ins. The old format looked like this:

	A	B	C	D	E
1		MONTHLY			
2		UTILITIES			
3		BILL			
4	JAN	30.00			
5	FEB	34.00			
6	MAR	38.50			
7	APR	41.00			
8	MAY	44.50			
9	JUNE	48.00			
10					
11					
12	TOTAL	236.00			

Now it looks like this:


```
      I     A    ||    B    ||    C    ||
1
2                      MONTHLY
3
4                      UTILITIES
5                      BILL
6
7 JAN                  30.00
8 FEB                  34.00
```

GLOBAL (G COMMAND): With this command you can set your
text to read from left or right, or you can set the number of
decimal places for your decimal values. Global means just what
it implies; entries all show the same for justify or decimal on an
entire worksheet. We really don't need to do anything more, but
you should know how this works. Global formatting can be
"cancelled out" on individual entries with the F command. Type
⌐ G ⌐. You are prompted with choices:

Global format: L, R, P

L   Changes all text entries to read from the left side of the
     column. Can be cancelled on individual entries using
     the F command.

R   Same as L, but causes text entries to read from the right side of the column.

P   Changes the number of decimal places that show to right of decimal point for each value entry. Can be cancelled on individual entries using the F command. When you decide to use G P, it offers you a range:

Precision: 0-9

This is the number of decimal places you are allowed.

By default, text entries are right-justified, and numeric entries are displayed with a precision of two (that is, with two digits to the right of the decimal point).

When a value greater than one contains too many digits to be displayed in cell — given the width and precision of the cell, a > symbol is displayed in the cell in place of the value. Using the W command to globally expand the cell width allows the number to be displayed.

Similarly, when a value less than one contains more digits than can be displayed in a cell — given the width and precision of the cell, a < symbol is displayed in the cell in place of the value. Using the W command to globally expand the cell width allows the number to be displayed.

For example, when you enter the value 123456 in a cell and the default width and precision are in effect, a > symbol is displayed in place of the value. Although the value contains six digits, an additional space is reserved for the sign. Positive values are displayed with a leading blank instead of a plus sign. When you expand the width to nine, the value is displayed in the following format:

1.23e + 05

This format, called "scientific notation," is used to display values whenever the value cannot otherwise be displayed in the cell, given the current width and precision in effect.

The number to the right of the plus sign indicates where the decimal point really appears in the value. A plus sign means "move the decimal point to the right." Similarly, a minus sign means "move the decimal point to the left." In this example, 1.23e + 05 represents the value 123000. Internally, in the computer's memory, the value is stored as + 123456.

FINFORM can retain up to 11 significant digits (that is, the 11 left-most digits). After 11 digits, numbers are stored imprecisely. For example, suppose that you changed the width to 15 and the precision to zero. The number 123456789015 (12 digits) would be displayed as 123456789020. Note how right-most digits 15 are represented as 20. The twelfth digit, 5, was rounded up.

Although you will probably never use numbers containing more than 11 digits, you should be aware how FINFORM stores and represents values.

FORMAT (F COMMAND): This command formats aspects of your worksheet with its submenu choices. We need to use one of them. Type ⌷F⌷. You are given choices:

FORMAT: L, R, G. P, =

L   When a text entry is left-justified, you can change it with this command. This can be used to override global justi-fication so you can make an entry appear left justified when everything else appears right justified. (See G command.)

R   Same as above, only changes an entry from left-justified to right-justified.

       Replacing contents of a cell always makes the justification revert to global, even if you've formatted with R or L

G   This reverts an entry to global justify or precision. (Cancels L, R or P. See G command.)

P   Allows you to override global precision. P means how many decimal places you want to display to the right of the decimal point. Upon choosing P, you're offered choice of range:

<p style="text-align:center">Precision: 0-9 (decimal places)</p>

=   This choice allows you to replicate text entries within a cell.

We need to use the = choice to make lines across our text. The = fills the column width of a cell with the character we specify. Then if we later widen or shrink the column width of that cell, the character within it automatically expands or shrinks also. Enter a single "soft" hyphen on the edit: line. (That's the long hyphen. You can't do it with the short "hard" one.) Now place the entry cursor over cell B3. Type =. The content: line in the edit block changes to text: repeating, and cell B3 is filled with the hyphen. Repeat this with cells B6, B19 and B21.

COPY (C COMMAND): This command copies the content of a cell or a range of cells to another cell or range of cells. Type ☐C☐. You are prompted to enter the cell you want to copy:

<p style="text-align:center">Copy: from. (Enter one cell or a range of cells)</p>

In this instance we want to copy from B6, where we've filled the cell with soft hyphens using the F = command. Enter B6. You are prompted to enter the cell you want to

Copy: to. *(Enter the cell or cells you are to copy into)*

In this case we want to copy from B6 through H6. Enter B6 after *from:* and press ⸢ RTN ⸥. Enter the range, B6)H6, after *to:* prompts. When you copy through cells that have entries, they are replaced. Now copy the range B6)H6 to B19)H19 and B21)H21. Your worksheet is now formatted with divider lines. You can use the C command to copy duplicate columns, or in any other situation where you want to copy a cell or group of cells to a corresponding position in another part of the worksheet (such as in the corresponding rows of hyphens).

The new format is starting to take shape now:

I	A	II	B	II	C	I
1						
2			MONTHLY			
3			————————			
4			UTILITIES			
5			BILL			
6			————————			
7 JAN			30.00			
8 FEB			34.00			
9 MAR			38.50			
10 APR			41.00			
11 MAY			44.50			
12 JUN			44.50			
13						
14 TOTAL						
15						
16						

```
17
18
19                  _____
20
21                  _____
```

DELETE (D COMMAND): This command allows you to clear part or all of a worksheet. Type ⌐D⌐. You are prompted with choices:

Delete: A, R, C, E

A   Clear the entire worksheet. To complete the deletion press ⌐Y⌐ after selecting A. If you change your mind about deletion, press ⌐RTN⌐ instead of Y.

R   Clears a row. Place the entry cursor over the row you want to delete and enter R.

C   Same as R, only used to delete columns.

E   Deletes a single entry in a cell. Place the entry cursor over the cell you want to blank out and enter E.

We need to blank out some entries. Place the entry cursor over the cells containing the text TOTAL and BILL, and the old value next to TOTAL in B14. Use the E option in the D command for each one in turn.

Let's stop for just a second. We've gone through a few of the commands now, setting up the basis for a format like the one in 4-3 so that you can get a fair idea of how they work. Before we continue, we'll show the entire format to you again so that you can follow it more closely while using the rest of the commands.

FIGURE 4-4 EXAMPLE OF COMMAND CHANGES

	A		B		C		D		E	
1										
2			MONTHLY EXPENDITURE:							
3										
4			UTILITIES		GROCERIES		CAR		HOUSE	
5							PAYMENT			
6										
7	JAN		30.00		150.00		225.00		900.00	
8	FEB		34.00		150.00		225.00		900.00	
9	MAR		38.50		150.00		225.00		900.00	
10	APR		41.00		151.00		225.00		900.00	
11	MAY		44.50		151.00		225.00		900.00	
12	JUN		44.50		151.00		225.00		900.00	
13	JUL		52.00		153.00		225.00		900.00	
14	AUG		55.00		153.00		225.00		900.00	
15	SEP		57.00		153.00		225.00		900.00	
16	OCT		60.00		155.00		225.00		900.00	
17	NOV		62.00		155.00		225.00		900.00	
18	DEC		64.00		170.00		225.00		900.00	
19										
20	TOTAL $+		582.50		1842.00		2700.00		10800.00	
21										
22										

ORDER OF RECALCULATION (O COMMAND): This command allows you to point the cursor in the direction you want it to travel after pressing RTN . This is especially useful when you are stacking text or values in a column or stringing them across a row, because as soon as you've made entry into a cell the entry cursor moves to the next cell to the immediate right or below. Type an O . You are prompted with choices:

Order of calculation: R, C

R   When performing calculations or text entry for a row, this automatically moves the entry cursor to the next row cell without using CTL-ESDX.

C   When performing calculations or text entry for a column, this automatically moves the entry cursor to the next column cell without using CTL-ESDX.

Use the R and C choices of the O command to complete the entries for the new worksheet seen in 4-4. Try using the C choice to stack your row labels, then use the R to move the cursor while entering your column headings. Don't total the columns though. We'll do that in the next section on built-in functions. Suggestion: for the columns of identical values, use the COPY command.

MEMORY (M COMMAND): This command tells you how much memory is left for creating, using or modifying a FINFORM worksheet. Press ⎡ M ⎤. You are prompted with a statement:

Number of bytes left: *(shows number)*

A byte equals about 1 character or space on a worksheet. On an average it will take about 1600 to 2000 bytes to build a worksheet like the one we're working on. Check to see how much you've got left, then press ⎡ RTN ⎤ to end statement.

The rest of the commands are not immediately relevant to what we're doing. The PRINT, SAVE and LOAD commands are described, but you'll find exact procedures on what to do under Appendix A-3, Backup.

PRINT, SAVE and LOAD (P S & L COMMANDS): These three commands enable you to save your worksheets on cassette, for future use and changes. You can then load them at a later date

for continued active use. You can (with the AQUARIUS™ printer) also get a printout of your worksheet. Complete procedures can be found under Appendix A-3 which contains a pull-out reference card with instructions for these commands.

We've looked at the entire CDFGILMOPSW menu, and used those commands which helped us build our replica of the budget format in 4-3 and 4-4.

To finish up this instructional phase, and the chapter, we'll be taking a closer look at the built-in functions. Just as we did with the command run-through, we'll define all of these functions and use some of them in completing our worksheet.

$ SUM AND OTHER $FUNCTIONS: A COMPLETE RUN-THROUGH

You've made text and value entries for columns A through B. We want to use the built-ins to make some projections. If you have at least 1000 bytes left or access to an AQUARIUS memory cartridge, then let's add three more columns, including a column that totals all the rows, so that we can make some variable projections if we want. The depiction in Figure 4-5 is an extension of the worksheet we have already created. If you feel you do not have enough memory remaining, total columns A through E as you follow along in the next section, and if there's enough memory, try making a total-row column like the one in entry H7 for row H.

FIGURE 4-5 EXTENSION OF EXPANDED WORKSHEET

	F		G		H	
	RECREATION		**INSURANCE**			**TOTAL $**
1						
2						
3						
4						
5	RECREATION		INSURANCE			TOTAL $
6						
7	500.00		100.00			1905.00
8	500.00		100.00			1909.00
9	500.00		100.00			1913.00
10	500.00		100.00			1917.00
11	500.00		100.00			1924.00
12	500.00		100.00			1924.00
13	500.00		100.00			1930.00
14	500.00		100.00			1933.00
15	500.00		100.00			1935.00
16	500.00		100.00			1940.00
17	500.00		100.00			1942.00
18	500.00		100.00			1959.00
19						
20	6000.00		1200.00			23131.00
21						
22						

Welcome first to the built-in functions. These are the functions you use to calculate problems and make your projections with FINFORM. They can be divided into two areas: $functions and arithmetic operators. $Functions are always preceded by a $ and are used (in most cases) to calculate a range of entries. Arithmetic operators work like the function-keys on a pocket calculator. Generally they're used to work out a formula on a single entry. Let's talk about $functions. First of all, the function name — like SUM or MIN — can be entered in uppercase or lowercase. FINFORM translates function names to uppercase.

$SUM We've briefly touched on this one already. Look at 4-5. All the totals in this example could be done using the $SUM function.

FORMULA: In all of these totals the formula looks like this:

COLUMN F: +$SUM(F7>F18)

COLUMN G: +$SUM(G7>G18)

COLUMN H: +$SUM(H7>H18)

The + lets FINFORM know you want to work a formula.

If you haven't already, go ahead and use $SUM to total the columns and rows on your worksheet. Be sure the entry cursor is placed over the cell where you want the formula to show.

Time to take a break again. We've got our text and values entered on the worksheet, our basic $sum formulas calculated. We'll go ahead and use the remaining $functions and operators to show how projections can be made with an existing worksheet.

$MIN This calculates the minimum value in a list of entries. If, for instance, you wanted to get the minimum value in column B:

FORMULA: +$MIN(B7>B18) (30.00 is the minimum value.)

$MAX This calculates the maximum value in a list of entries. If, for instance, you wanted to get the maximum value in column B:

FORMULA: +$MAX(B7>B18) (64.00 is the maximum value)

$CNT This counts the number of non-blank cells in a range or list of entries. Non-blank means text, values — any kind of entry. Suppose we wanted to get a count of all the non-blank entries for column B:

FORMULA: + $CNT(B2>B23) (text and all)

$AVG This calculates the average of non-blank entries. If you want to get an accurate average of a range of entries in a column or row, be sure to specify only cells containing values. Otherwise FINFORM will count entries containing text, when it divides a total by the number of entries. Suppose we want an average of the totals in column H.

FORMULA: + $AVG(H7>H18) (Range includes values only, since these lines contain only values) Only one range of values at a time can be averaged.

$ABS This calculates the "absolute value" of a number (that is, the number itself without a sign).

FORMULA: + $ABS (B7-50) (Answer: 20)

+ This can be used when you want to add the values of separate entries, or add a number to a value entry.

EXPRESSION: + B7 + E20 (separate entries)
+ B7 + 15 (projects additional costs)

− This can be used when you want to subtract one value from another, as shown under $ABS, or can be used to subtract a number from an entry to make a projection.

EXPRESSION: + C17-C7
+ C17-20

`*` This allows you to multiply entries by another number.

EXPRESSION: 12 * E7 (multiply JAN payment by the number of months instead of using the $SUM function, since all payments are projected to be the same.)

`/` Division can be used for a variety of formulas, including the working of percentages.

EXPRESSION: + B7/B8 (gets fraction)
$\qquad$ + (B7/B8) * 100 (gets actual percentage increase)
$\qquad$ + (B7/100) * 12.5 (gets projected increase)

Expressions involving + or − must have () around them if you plan on multiplying or dividing: (B7 + B8)/B20. FINFORM reads from left to right and picks out / and * before it ''sees'' anything else.

Snapshot calculations. If you want to make a quick calculation, enter a ? on the *edit:* line and the expression or formula — (no + necessary to precede this function) the results are displayed beneath the *edit:* line to 11 digits. Snapshot calculations are just that — using your worksheet as a scratch-pad. They have no effect on any permanent entry.

This chapter has given you a complete hands-on run-down of FINFORM's formatting and projection capabilities. We've talked about:

☐ CDFGILMOPSW. The entire command menu and how to use it.
☐ $FUNCTIONS. All the built-in functions and arithmetic operators.
☐ In addition, you've walked through the construction of an entire worksheet and should now be able to put together a good sized worksheet without too much difficulty.

You still need to know how to store and retrieve your worksheets from cassette, and you'd probably like some more practice creating worksheets. We also have some suggestions we'll share with you on the building of templates (blank formats) that you can store and use as you need them, and some possible ways you can keep records on your cassette and worksheet storage. In the upcoming chapter and appendices we'll be covering any remaining questions you might have on any of these subjects.

CHAPTER 5:

TEMPLATES AND PRACTICE PROBLEMS

This chapter is designed for use in combination with the preceding chapter and the appendices. You can follow it straight through — or you can jump through it as much as you like. The idea is for you to get better at FINFORM and feel as comfortable with it as you would with any other reliable tool.

When you decide to go ahead and build some practice formats, using the ideas or instructions provided in this chapter, be sure you're familiar with saving and loading procedures for worksheet files. These can be found in Appendix A-3 and are extremely important. Without them you can't save or recover any of your worksheets, and in the process of working with these practice problems, you may find yourself constructing a worksheet you'd like to save for future use.

PRACTICE PROBLEMS: BUILDING TEMPLATES

Templates are just blank formats that are constructed for future use. They can be designed for any purpose with complete and detailed formatting, then tucked away on cassette for later activation. Sometimes these are worksheets you just don't use that often, but they can also be frequently used formats that you are filling up a little bit at a time, over a set period.

What we're going to do is show you a few templates you can build for practice, and we'll also give you some suggestions on a few other formats that will not only increase your skill with FINFORM, but give you more than just a couple of ideas about the things you can do with FINFORM as well.

Most of the examples depicted are templates (no values entered) with practical applications in mind. They're easy to build, and all of them can fit on a printout in a single segment. Some of them can be constructed for use on the electronic worksheet alone. Others you can print up as convenient blank forms with spaces provided for entry which can be transferred to the electronic worksheet at a later date. We'll be starting out with some simple problems and then work our way to the more complex stuff in later examples and suggestions.

Try the first couple just to see how they feel; if you find them too easy, move ahead. Remember to have your Data Recorder ready for save/load procedure, (refer to Appendix A-3) and remember to keep the concept of templates in mind. Anything you make can be stored for future use, whether you've actually made any entry on the format or not.

PROBLEM (!) Create a template that can be used as a format for documenting your worksheets from ''the inside''. This format can go at the top of every worksheet preceding the format, and can contain a match of the descriptive information you keep as a written record. (For more detail see Appendix 4.)

FIGURE 5-1 TEMPLATE FOR INTERNAL DOCUMENTATION

```
  .  I    A    II    B    II

1     TEMPLATE:

2     AUTHOR:

3     DATE WRITTEN:

4     LAST DATE USED:

5     PURPOSE:
```

PROBLEM (!) Make a worksheet that can be printed out and used as a simple time-schedule, like the one shown here.

FIGURE 5-2 TIME SCHEDULE

```
     I    A    I
 1
 2
 3
 4
 5   TIME
 6   AM
 7   6:00
 8   6:30
 9   7:00
10   7:30
11   8:00
```

```
12  8:30
13  9:00
14  9:30
15  10:00
16  10:30
17  11:00
18  11:30
19  12:00
20  PM
21  12:30
22  1:00
23  1:30
24  2:00
25  2:30
26  3:00
27  3:30
28  4:00
29  4:30
30  5:00
31  5:30
32  6:00
33
```

TEMPLATES

PROBLEM (!) Using the I, O and other appropriate commands, take the template in 5-2 and expand it to include the days of the work-week plus extra space for text entry. Use 5-3 as a guide.

FIGURE 5-3 TIME SCHEDULE EXPANDED FOR FULL WEEK

```
     I    A    II    B    II    C    II    D    II
 1
 2
 3                     MONDAY  TUESDAY  WEDNESDAY
 4
 5  TIME
 6  AM
 7
 8
 9  6:00
10
11
12  6:30
13
14
15  7:00
16
17
18  7:30
19
20
21  8:00
22
23
24  8:30
```

PROBLEM (!) Design a spreadsheet like the one in 5-4 which shows a record of last year's kilowatt-hours usage, a projection for this year and the real consumption so far, plus the difference. Do this in such a way as to make the revision and updating easy.

FIGURE 5-4 TABLE OF REAL AND PROJECTED KILOWATT CONSUMPTION

	A		B		C		D		E	
1										
2		KILOWATT HOURS								
3										
4		YEAR 1		YEAR 2		YEAR NOW			GAIN/LOSS	
5										
6										
7	JAN	50		60		71			9	
8	FEB	62		65		75			10	
9	MAR	71		73		80			7	
10	APR	56		65						
11	MAY	61		66						
12	JUN	65		71						
13	JUL	78		80						
14	AUG	85		87						
15	SEP	80		82						
16	OCT	78		81						
17	NOV	80		90						
18	DEC	90		96						
19										
20		856		916		226				

FIGURE 5-5 SCORE CARD FOR SINGLE SUBJECT

```
       I    A    II    B    II    C    II    D    II    E

 1
 2
 3   NAME _____    Grade Sheet
 4                                            TOTAL
 5   TYPE    SCORE    POSSIBLE TOTAL    POSSIBLE
 6
 7   CHAP 5,6
 8   CHAP 7,8
 9   1ST MIDTERM
10   CHAP 9
11   CHAP 10,11
12   CHAP 12,13,14
13   2ND MIDTERM
14   1ST PAPER
15   CHAP 15,16
16   CHAP 17,18,19
17   CHAP 20
18   CHAP 21,22
19   2ND PAPER
20   FINAL EXAM
21
```

PROBLEM (!) Enter values into the template in 5-5, and calculate formulas. Try using the $MIN, $MAX and $AVG functions.

PROBLEM (!) Make a simple ledger for updating of stocks. This would include a description, date purchased, date sold, profit and loss. Use 5-6 as an outline.

FIGURE 5-6 RECORD OF SHARES PURCHASED AND SOLD

	I	A	II	B	II	C	II	D	I
1									
2					* * * * * * * * * * *				
3					STOCK INDEX				
4					* * * * * * * * * * *				
5									
6									
7	DESC								
8									
9	BUY DATE								
10									
11	SHARES BOUGHT								
12									
13	$ PER SHARE				X				
14									
15	BROKER FEE				+				
16									
17	TOTAL COST				=				
18									
19	* * * * * * * * * * * * * * * *								
20									
21	SELL DATE								
22									
23	SHARES SOLD								
24									
25	$ PER SHARE				X				
26									
27	BROKER FEE				−				
28									
29	NET SALE				=				
30									
31	GAIN/LOSS								
32									

PROBLEM (!) Enter values into 5-6, and compute formulas using appropriate arithmetic operators. Try using the $AVG, $ABS, $MIN and $MAX functions.

PROBLEM (!) Build a format that covers medical costs for family members. Include spaces for description, date and cost. Be sure you subtotal so that entire columns of values don't have to be retotaled. Use 5-7 as a guideline.

FIGURE 5-7 FAMILY MEDICAL ACCOUNT FORMAT

I	A	II	B	II	C	II	D	II
2								
3			MEDICAL $$$$$$$$$$: THIS YEAR					
4			*****************************					
6								
7	DESCRIPTION		MEMBER 1		MEMBER 2		MEMBER 3	
8	//////////		————		————		————	
9								
10	OFFICE VISIT		DATE / $		DATE / $		DATE / $	
11								
16								
17								
18	SUBTOTAL		————		————		————	
19	//////////							
20								
21	HOSPITAL							
23								
26	SUB		————		————		————	
30	//////////							
31								
32	DENTAL							
33								
38								

39
40 SUB   _____   _____   _____
41 ///////////
42
43 OTHER
44
49
51 SUB   _____   _____   _____

52 ///////////
54
55 ///////////   /////////   /////////   ////////

57 TOTAL/

FIGURE 5-8 ACCOUNT SHEET FOR
ENERGY SAVING IMPROVEMENTS

```
  I      A      II     B     II     C     II     D     II
  1
  2                      AUDIT, ENERGY
  3                      * * * * * * * * * * * *
  4
  5  NAME _____
  6
  7  ADDRESS_____
  8
  9  CITY_____      (EC / AS) = YOR
 10                           Estimated    Annual      Years of
 11  1. INSULATION            Cost         Savings     Return
 13
 14  a.  attic               _____   _____    _____
 15
 16  b.  ceiling             _____   _____    _____
 17
 18  c.  floor               _____   _____    _____
 19
 20  d.  wall                _____   _____    _____
 21
 22  e.  cellar              _____   _____    _____
 24
 25  2. ADDITIONS
 26
 27  a.  sealants            _____   _____    _____
 28
 29  b.  stripping           _____   _____    _____
 30
 31  Storm:
 32
 33  d.  windows             _____   _____    _____
```

34					
35	e.	doors	___	___	___
36					
37					
38	3. SOLAR HEATING				
39					
40	a.	panels	___	___	___
41					
42	b.	tubing	___	___	___
43					
44	c.	mountings	___	___	___
45					
46	d.	mountings	___	___	___
47		unit			
49	e.	photoelectric	___	___	___
50					
51					
52	*****TOTAL		___	___	___

PROBLEM (!) Prepare an energy edit sheet like the one in 5-8 to be used for keeping an account of energy saving home improvements. The account can later be used for submission to the utilities company for a rate reduction or refund, or to the IRS for deduction on your return. Use the C and F commands to help format your template.

OTHER PROBLEMS (?) As you become more proficient at the art of building and storing formats you'll find yourself getting more willing to try larger and more complex worksheets. Here are a few more general ideas.

(!) Try your hand at building a template that keeps account of every electrical appliance in every room in your home. Make up columns that cover estimated kilowatt hours per month, cost per month and cost per year. Be sure to include a check column

that determines whether an appliance is used often enough to qualify as frequently-used. Classify those in frequent use with a 1, and those not used or rarely used with a 0. Enter cost per kilowatt hour at the top of the report and use it as the basis for calculating your formulas.

(!) Make up templates which can be used to complete the information on 1040A and various IRS tax schedules. Include all necessary rows and columns.

(!) Come up with a format that could be used to record your home consumption of natural gas. Use columns which contain the month, gas in hundredths of cubic feet, and conversion to thermal units of gas used. Use a formula of Ccf (hundreds of cubic feet) times a conversion factor of 1.026. Total the usage and conversion columns.

(!) Employers often prepare an annual summary of benefits for their employees. Prepare a template to be used for the working members of your family. Keep entries open for entry of dollar values, and include columns or rows on group life insurance, disability, Social Security, retirement and pension plans, medical benefits and gross annual income.

This chapter gave just a few ideas of the type of budget formats you can create with FINFORM. We've discussed:

☐ Different ways of using your formats, both "inside" the program on the electronic worksheet, as well as in printout of blank forms that can be used to keep account of your information for later entry or as simple forms, or both.

☐ The use of templates, or how you can store your worksheet formats indefinitely for use as needed. These range from formats that will be immediately filled at some future date, to those that will contain mostly zeroes as place-holders and be filled up slowly, over a long period.

This is the final chapter in the book. The remainder of the text contains appendices and reference cards on PRINT, SAVE and LOAD procedures, commands and functions, a keyboard overlay, and some tips on how to store your worksheet files and keep records on them, both on the worksheet and in a log-book.

REFERENCE SECTION

FINFORM APPENDICES
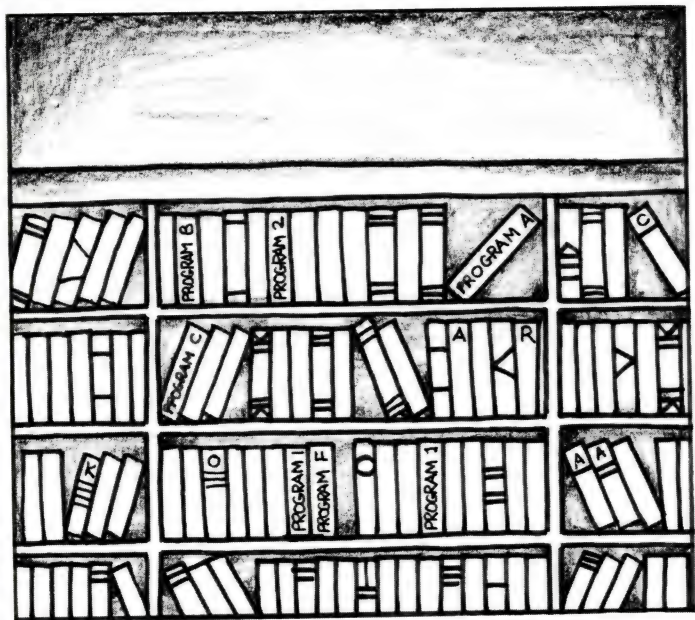
NOTE: For a complete hands-on run-through of these commands, see Chapter 4, USING FINFORM.

SYMBOL	NAME	DESCRIPTION
/ + C	COPY COMMAND	Copies an entry or range of entries from a cell or range of cells to another cell or range of cells on the worksheet.
/ + D	DELETE COMMAND	Deletes a row, column, an entry, or clears an entire worksheet.

Choices:

A	Deletes whole format
R	Deletes a row
C	Deletes a column
E	Deletes an entry

SYMBOL	NAME	DESCRIPTION
/ + F	FORMAT COMMAND	Formats a single entry, text or value. Fills a cell with a repeating character.

Choices:

L	Left justified
R	Right justified
G	Global justified or precision
P	Change precision from global

SYMBOL	NAME	DESCRIPTION
=		Fills a cell with a repeating character
☐/ + ☐G	GLOBAL COMMAND	Sets up the worksheet to conform to a global standard for justify.

Choices:

L	Sets worksheet for left justify	
R	Sets worksheet for right justify	
P	Sets a global precision (number of decimals displayed.)	

☐/ + ☐I	INSERT COMMAND	Inserts a row or a column.

Choices:

R	Inserts row	
C	Inserts column	

☐/ + ☐L	LOAD COMMAND	Loads a worksheet from cassette back into the program for active use.
☐/ + ☐M	MEMORY COMMAND	Tells you how much memory you have left for creation of a worksheet.
☐/ + ☐O	ORDER OF RECALCULATION COMMAND	Points the cursor down a column or across a row using RTN instead of CTL-ESDX.

Choices:

R	Points the entry cursor across a row.	
C	Points the entry cursor down a column.	

SYMBOL	NAME	DESCRIPTION
/ + P	PRINT COMMAND	Causes a worksheet to be printed out.
/ + S	SAVE COMMAND	Saves a worksheet by transferring it from active use in the program to a file on cassette.
/ + W	WIDTH COMMAND	Globally widens columns between 5 to 36 character spaces.
>	GOTO	Not a regular part of the command menu. Sends the entry cursor to any cell in the worksheet.

APPENDIX A-2
BUILT-IN FUNCTIONS/ $ + = */, & ?

BUILT-INS: NOTE: A complete run-through can be found in Chapter 4, USING FINFORM

$SUM	Sums values
$MIN	Finds minimum value in a list or range
$MAX	Finds maximum value in a list or range
$AVG	Averages the values in a list or range
$ABS	Finds the absolute value in a list or range
$CNT	Counts the number of nonblank cells in a list or range.

ARITHMETIC OPERATORS:

These can be used in combination to create complex expressions:

+   Used for addition in formulas involving separate entries.
−   Used for subtraction in formulas involving separate entries.
*   Used to multiply in formulas involving separate entries.
/   Used to divide in formulas involving separate entries.

SNAPSHOT CALCULATION

? Entry of this symbol on the edit: line allows you to use your worksheet as a scratchpad. You can then perform any calculation using any function or operator without entering results.

APPENDIX A-3
BACKUP, PRINTING, LOADING, SAVING & MEMORY

PRINT COMMAND

This command is used when you want to print a worksheet. The AQUARIUS Printer can print 40 character spaces wide per segment (and 132 characters per worksheet line; once the print goes out to 40 characters, it returns underneath the original line and is to be considered part of it.) For most worksheets, 38 is an optimal number. If your worksheet is too large, you can print one specified segment at a time. Type $\boxed{P}$. You are prompted with a request for what part of the worksheet you want the printout to begin with:

A. Report printing:

top left entry: (Enter the column-row coordinates of the cell you want to appear in the top left corner of the printout. Enter the cell and ⎡RTN⎤.)

B. bottom right entry: (Same as above only for bottom right.)

C. printer width: 20-132 (Specify character width. Minimum is 20 characters, maximum 132. Select width and ⎡RTN⎤.)

D. There are two options. You can print one sheet at a time (for example, if you are using a sheet-oriented printer). Or, you can print worksheets continuously with a specified number of line skips between ''pages'' (this is normally the mode you would use to print worksheets on your Aquarius Printer).

You are prompted to press ⎡Y⎤ (shifted or unshifted) to begin printing. To print one page at a time (so you can insert a new sheet of paper in your sheet-oriented printer to print the next page), press ⎡Y⎤ to initiate printing, and press ⎡Y⎤ after each page has been printed to indicate when you are ready to print the next page. The message ''Printing report'' appears on the screen and remains on the screen until the printout is concluded.

Printing one page at a time on your Aquarius printer is also helpful when you want to inspect pages one at a time before continuing the printout.

However, if you want to print the worksheet continuously, press ⎡RTN⎤ when you are prompted to press 'Y' to start at each page. In response, you are asked to enter the number of lines to

be skipped between pages. Enter the number, and press [RTN].
For example, 1 causes pages to be separated by one blank line,
2 causes pages to be separated by two blank lines, etc. The
message "Printing report" appears on the screen and remains
on the screen until the printout is concluded.

SAVE COMMAND

The S command, from the CDFGILMOPSW menu, is used to
save your worksheet on cassette. You do it like this:

A. Make sure your Data Recorder is properly plugged into your
AQUARIUS computer.

B. Look at the tape counter. Make sure that there are at least
three or more spaces between your new file and the last file
you've saved. If it's a new tape, make sure you've gone past the
plastic leader at the beginning, and that your counter reflects
how far you went. Keep a written record of the load point (start
of file) on all saved worksheets.

C. After entering the S command, you are prompted to name
your worksheet with a filename. Enter the filename, consisting of
no more than six characters. Note that FINFORM converts
lowercase letters to uppercase in file names.

D. You are prompted to press [Y] when you are ready to start
saving your worksheet. First, press the (PLAY) and (RECORD)
keys on your Data Recorder at the same time. Then, press the
[Y] key (upper or lower case) on your keyboard.

E. You'll hear a high-pitched squeal from your television, a blurb
of characters flash on the *edit:* line, and FINFORM tells you it is
saving the worksheet.

REFERENCE

F. After the file is saved, press (STOP) on your Data Recorder and make a note of where the file ended.

THE LOAD COMMAND

The load command loads your saved worksheets off of a cassette and back into active use. You do it like this:

A. Make sure your Data Recorder is plugged into your AQUARIUS computer.

B. Be sure you are at the section on your tape which corresponds to the file you want to retrieve.

C. After entering the L command, you are prompted to enter

> filename:

Enter the name of the worksheet file that you want to load, and press [RTN]. Or, omit the filename altogether, and press [RTN]. When you enter a filename, FINFORM only loads the specified worksheet. When you do not specify a filename, FINFORM loads the first worksheet that it encounters on the cassette. Note that FINFORM ignores the names and contents of files that do not contain worksheets. Also note that FINFORM converts lowercase letters to uppercase in filenames.

D. You are prompted to press 'Y' when you are ready to begin loading the worksheet. Press [Y] (shifted or unshifted). Then, press the (PLAY) key on your Data Recorder.

If you omitted the filename, FINFORM loads the first worksheet that it encounters on cassette.

If you specified a filename, FINFORM skips over worksheets until it finds the worksheet you asked for. Each time FINFORM

skips over a worksheet, it advises you which worksheet is being skipped. If you missed the load point for your file, press the (STOP) key on your data recorder, and advance or rewind the tape just prior to the file loadpoint. Then, press the (PLAY) key on your Data Recorder to continue.

E. A blurb of characters flash on the *edit:* line as FINFORM loads a file.

F. Quickly press the (STOP) key on your Data Recorder as soon as the worksheet is loaded.

TIPS ON LOADING AND SAVING

Always make sure you've got plenty of space on a section of tape to store a file without accidentally "writing over" the next file on the tape. Naturally you're going to be changing information on your worksheets, then writing over them. If you decide to store a template or blank format, enter zeroes into all the appropriate cells where values would be. That way the amount of tape you use will be the same, no matter how many values are entered after the original blank format save.

If you're starting an entirely new worksheet, start with a fresh tape. It is also recommended you keep your files "pure"; that is, don't mix FINFORM files with other kinds of programs or files on the same tape.

If you've got trouble loading a worksheet, try adjusting the volume on your data recorder — it varies from machine to machine. Some load properly with the volume all the way up, others with it down. The AQUARIUS Data Recorder automatically adjusts the pitch for you. If you want to save what you've got on a cassette without any changes, you can write/protect your files by breaking off the tabs located at the back of the cassette cartridge. If you decide to make further changes, cover the in-

dentations over with a strip of cellophane tape. Last, and most important, ALWAYS make a backup of any worksheet you plan to save. Whenever you save a worksheet, save on two cassettes, one for your regular use and one for your backup. Store it in an alternative place.

WORKING WITH MEMORY

How many worksheets you can create in one sitting depends on how much memory your AQUARIUS computer contains. A basic worksheet of about five columns that can fit into a single segment of printout is going to take up about a thousand bytes, or 1K of memory. Always check the memory remaining to you through the M command, especially at the beginning and during the middle of a long project.

APPENDIX A-4
DOCUMENTATION: INTERNAL AND EXTERNAL

As you get further into the creation of worksheets, you'll want a complete system of documentation, that is, keeping records of your worksheet. This can be done either in form of a log book, or "inside" the program, on the actual worksheet.

EXTERNAL RECORD KEEPING

It's just as important to keep some kind of record outside your worksheet as it is to keep one on it. Probably more. This can range from a simple log book that contains a list of cassettes and their numbers with lists of file numbers, names and types of worksheets contained on them, to individual packets for each cassette in addition to the log book.

This kind of record-keeping can consist of:

• A summary sheet with directions (a printout of your internal documentation template might be enough).

• Example of a printout of your most recent update. This can be footnoted with your own comments.

When you need this kind of record, it might be a good idea to store your records on each worksheet in a separate plastic envelope along with sample printouts, instructions, and so on. If you really want to keep things divided, store each worksheet on a separate cassette and store the cassette with your record packet in the kind of plastic envelope that has three holes in it so you can lock a number of them into a ring-binder.

In A-4B we've got a typical example of the kind of record sheet you might want to create for external record keeping. You might even design this sheet as a template on a FINFORM worksheet, then print up a few dozen to use as your external record sheets.

FIGURE A-4B EXAMPLE OF EXTERNAL RECORD SHEET

RECORD PACKET

WORKSHEET FILENAME: _____
CASSETTE ID # _____

PURPOSE _____
_____

DATE WRITTEN _____
AUTHOR _____

BACKUP
NAME/LOCATION _____

SPECIAL INSTRUCTIONS:

_____
_____
_____
_____

RECORD OF USE: COMMENTS:

_____   _____
_____   _____
_____   _____
_____   _____

If you think you're going to be using any one worksheet on a regular basis, whatever record you keep on it from the time of its creation is going to be very important to you later on. The important thing is not how lengthy your records are, but how much they can tell you at some future date.

APPENDIX A-5
KEYBOARD OVERLAY

This is what the keyboard overlay looks like. Find the 2 halves of the overlay and place them over your AQUARIUS™ Home Computer keyboard for added control in using the FINFORM™ worksheet.

This warranty excludes incidental or consequential damages resulting from the product or use of the product. (Some states do not allow the exclusion of incidental or consequential damages, so the above exclusion may not apply to you.)

This warranty gives you specific legal rights and you may also have other rights which vary from state to state. This warranty does not cover damage resulting from purchaser abuse, accident, negligence, or damages subsequent to purchase.

AQUARIUS™

HOME COMPUTER SYSTEM